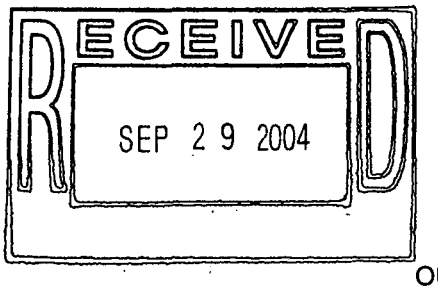
Draft Environmental Restoration
RFCA Standard Operating Protocol
for Routine Soil Remediation
FY04 Notification #04-11
IHSS Group NE-1 (Ponds B-1, B-2, and B-3)

Approval received from the U.S. Environmental Protection Agency

( ).

Approval letter is contained in the Administrative Record.

September 2004



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ATTACHMENTS

ACRONYMS

AL	action level
Am	americium
BMP	best management practice
BZ	Buffer Zone
BZSAP	Buffer Zone Sampling and Analysis Plan
COC	contaminant of concern
cy	cubic yard
D&D	Decontamination and Decommissioning
DOE	U.S. Department of Energy
EDDIE	Environmental Data Dynamic Information Exchange
EPA	U.S. Environmental Protection Agency
ER	Environmental Restoration
ER RSOP	Environmental Restoration RFCA Standard Operating Protocol
FY	Fiscal Year
IA	Industrial Area
IHSS	Individual Hazardous Substance Site
MCL	maximum contaminant level
MDL	method detection limit
nCi/g	nanocuries per gram
NFAA	No Further Accelerated Action
OU	Operable Unit
PAC	Potential Area of Concern
PCB	polychlorinated biphenyl
pCi/g	picocuries per gram
PCOC	potential contaminant of concern
PDF	Portable Document Format
POC	Point of Compliance
POE	Point of Evaluation
Pu	plutonium
RAO	remedial action objective
RFCA	Rocky Flats Cleanup Agreement
RFETS	Rocky Flats Environmental Technology Site
RL	reporting limit
RSOP	RFCA Standard Operating Protocol
SSRS	Subsurface Soil Risk Screen
SVOC	semivolatile organic compound
UBC	Under Building Contamination
VOC	volatile organic compound
WRW	wildlife refuge worker

1.0 INTRODUCTION

This Environmental Restoration (ER) Rocky Flats Cleanup Agreement (RFCA) Standard Operating Protocol (RSOP) for Routine Soil Remediation (ER RSOP) (DOE 2003a) Fiscal Year (FY) 04 Notification includes the notification to remediate Individual Hazardous Substance Sites (IHSSs), at the Rocky Flats Environmental Technology Site (RFETS) Buffer Zone (BZ) during FY04. The purpose of this Notification is to invoke the ER RSOP for Ponds B-1, B-2, and B-3 in IHSS Group NE-1. Activities specified in the ER RSOP are not reiterated here; however, deviations from the ER RSOP are included where appropriate.

Sediment and soil with contaminant concentrations greater than the RFCA wildlife refuge worker (WRW) action levels (ALs), or as indicated by the Subsurface Soil Risk Screen (SSRS), and associated debris will be removed in accordance with RFCA (DOE et al, 2003) and the ER RSOP (DOE 2003a).

IHSS Group NE-1 consists of the Walnut Creek and Woman Creek A, B, and C-Series retention ponds and are shown on Figure 1. The proposed remediation sites covered under ER RSOP Notification #04-11 are listed in Table 1.

Table 1
Potential Remediation Areas for IHSS Group NE-1

IHSS Group	IHSS Site	PCOCs	Media	Estimated Remediation Volume (in place)
NE-1	IHSS 142.5 (Pond B-1) IHSS 142.6 (Pond B-2) IHSS 142.7 (Pond B-3)	Metals PCBs Radionuclides SVOCs VOCs	soil and sediment	7,000 CY

CY – cubic yards
PCBs – polychlorinated biphenyls
SVOCs – semivolatile organic compounds
VOCs – volatile organic compounds

2.0 IHSS GROUP NE-1

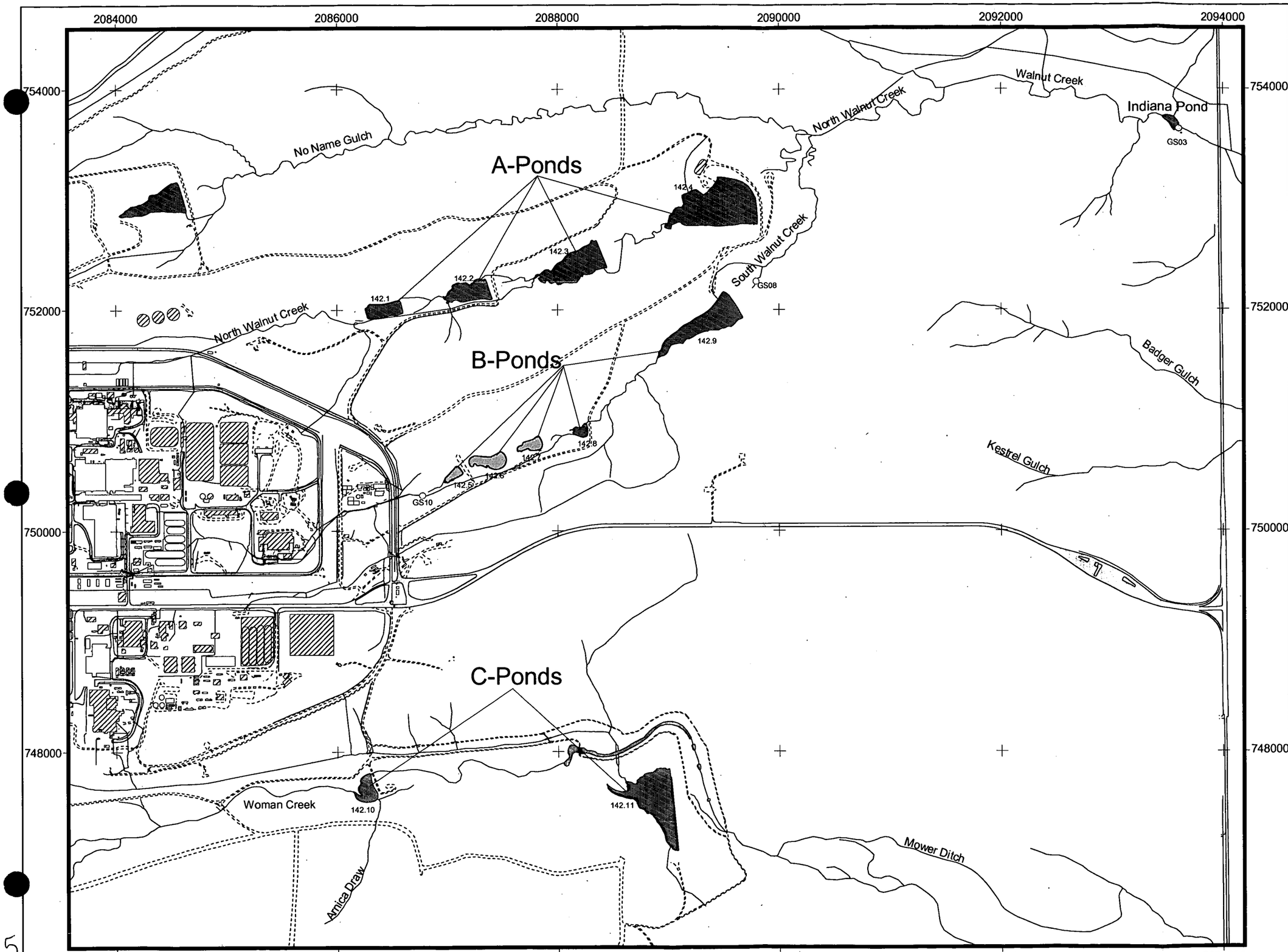
IHSS Group NE-1 (Figure 1) contains the A, B, and C-Series Ponds. This ER RSOP Notification addresses only Ponds B-1, B-2 and B-3, as shown on Figure 2.

2.1 PCOCs

Potential contaminants of concern (PCOCs) at IHSS Group NE-1 (Ponds B-1, B-2, and B-3) are listed in Table 1. The PCOCs were determined based on process knowledge and data collected during previous studies (DOE 1992, 1996, and 1997).

Figure 1

IHSS Group NE-1
A, B, and C-Series Ponds
Location Map



KEY

- Proposed remediation area (Ponds B-1, B-2, and B-3)
- IHSS location (Pond)
- Building/structure
- Demolished structure
- Paved area
- Dirt road
- Stream, ditch, or other drainage feature
- Surface water Point of Evaluation (POE) station
- Surface water Point of Compliance (POC) station

N
W E
S

400 0 400 800 Feet

Scale = 1:10,000

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD 27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by: RADMS

Prepared for: KAISER•HILL COMPANY

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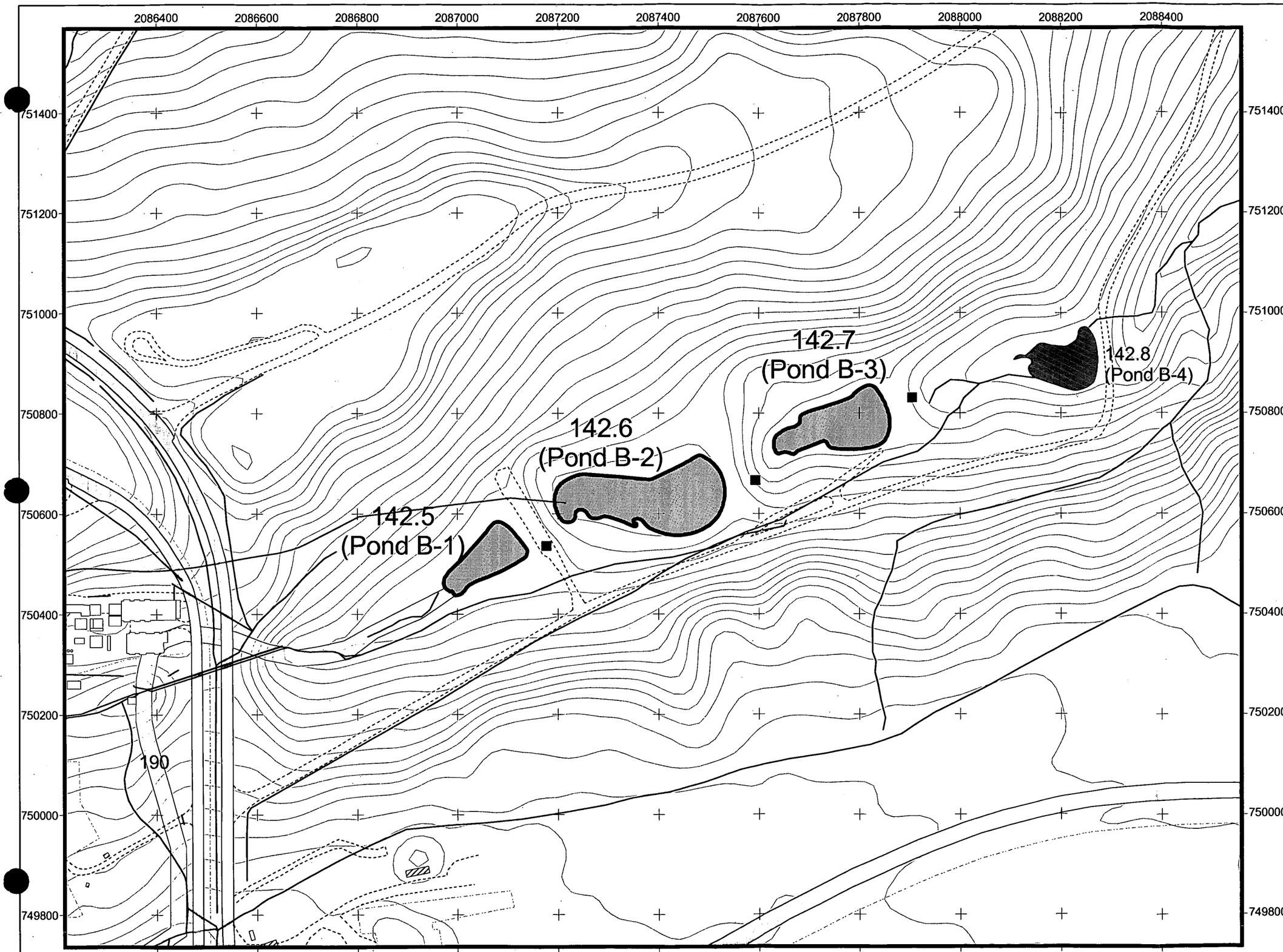
Figure 2

IHSS Group NE-1 (Ponds B-1, B-2, and B-3) Potential Remediation Areas



KEY

- Proposed remediation area (Ponds B-1, B-2, and B-3)
- IHSS location (Pond)
- IHSS location
- Building/structure
- Paved area
- Topography (5-ft contour interval)
- Dirt road
- Stream, ditch, or other drainage feature
- OPWL location (removed)
- OPWL location
- OPWL location (planned to be removed)
- Approximate location of air sampler

N
W E
S

100 0 100 200 Feet

Scale = 1:2,200

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD 27

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ne-1char 01-27-04 gpp.apr September 2004

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2.2 Project Conditions

The following conditions are present within the IHSS Group NE-1, Ponds B-1, B-2, and B-3 area:

- The general types of materials that have been routinely released to the B-Series drainage during the history of the RFETS include the following: treated sanitary effluent, treated and untreated process waste, treated and untreated decontamination laundry wastewater, cooling tower blowdown, footing drain flows and stormwater runoff.
- Ponds B-1 and B-2 are isolated from the South Walnut Creek drainage except during emergency events. Pond B-3 receives discharges of treated water from the Site's Wastewater Treatment Plant.
- Sediment samples collected from the Ponds B-1, B-2, and B-3 and nearby areas indicate the presence of americium (Am)-241 and plutonium (Pu)-239/240 at activities greater than the WRW ALs (Figure 3).
- Soil samples collected from the B-Series Ponds and nearby areas indicate one location (CW46-001) containing Am-241 and Pu-239/240 at activities greater than the WRW ALs (Figure 4).
- None of the remaining PCOCs (metals, PCBs, SVOCs, and VOCs) were detected in sediments and soil at levels above the WRW ALs.
- Sediment depth measurements in the B-ponds indicate average depths from 1 to 2 feet thick. Isolated pockets of sediment may be deeper.

2.3 RFCA Subsurface Soil Risk Screen Evaluation

An SSRS is performed when non-radionuclides and uranium are present in the soil six inches below the ground surface, or when Am-241 and Pu-239/240 are present below three feet from the ground surface. Current site conditions were evaluated using available data to determine whether remediation is required by the SSRS. The SSRS will be conducted again after the accelerated action and related confirmation sampling tasks are completed. The accelerated actions taken, confirmation results, and a revised SSRS will be documented in the IHSS Group NE-1, Ponds B-1, B-2, and B-3 Closeout Report.

Screen 1 – Are contaminant of concern (COC) concentrations below RFCA Table 3 soil ALs for the WRW?

Yes. Existing sediment and surface soil data indicate that contaminant concentrations exceed RFCA WRW ALs. In sediment, the maximum Pu-239/240 detection was reported at an activity of 939.4 pCi/g at a depth of 0.0 to 0.5 feet. In surface soil, the maximum Pu-239/240 detection was reported at an activity of 104.1 pCi/g.

Screen 2 – Is there a potential for subsurface soil to become surface soil (landslide and erosion areas identified on Figure 1)?

Yes. IHSS Group NE-1 Ponds B-1, B-2, and B-3 are located in an area subject to erosion and landslides in accordance with Figure 1 of RFCA (DOE et al, 2003). Under the

THIS TARGET SHEET REPRESENTS AN
OVER-SIZED MAP / PLATE FOR THIS DOCUMENT:
(Ref: 04-RF-00975; KLW-020-04)

Draft Environmental Restoration RFCA Standard Operating Protocol for Routine Soil Remediation FY04 Notification 04-11 IHSS Group NE-1 (Ponds B-1, B-2, and B-3)

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Figure 3:

IHSS Group NE-1 Ponds B-1, B-2, and B-3 Existing Sediment Sampling Results Greater than MDLs/RLs or Background Means Plus Two Standard Deviations

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September 2004

CERCLA Administrative Record Document, OU06-A-000523

U.S. DEPARTEMENT OF ENERGY
ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

GOLDEN, COLORADO

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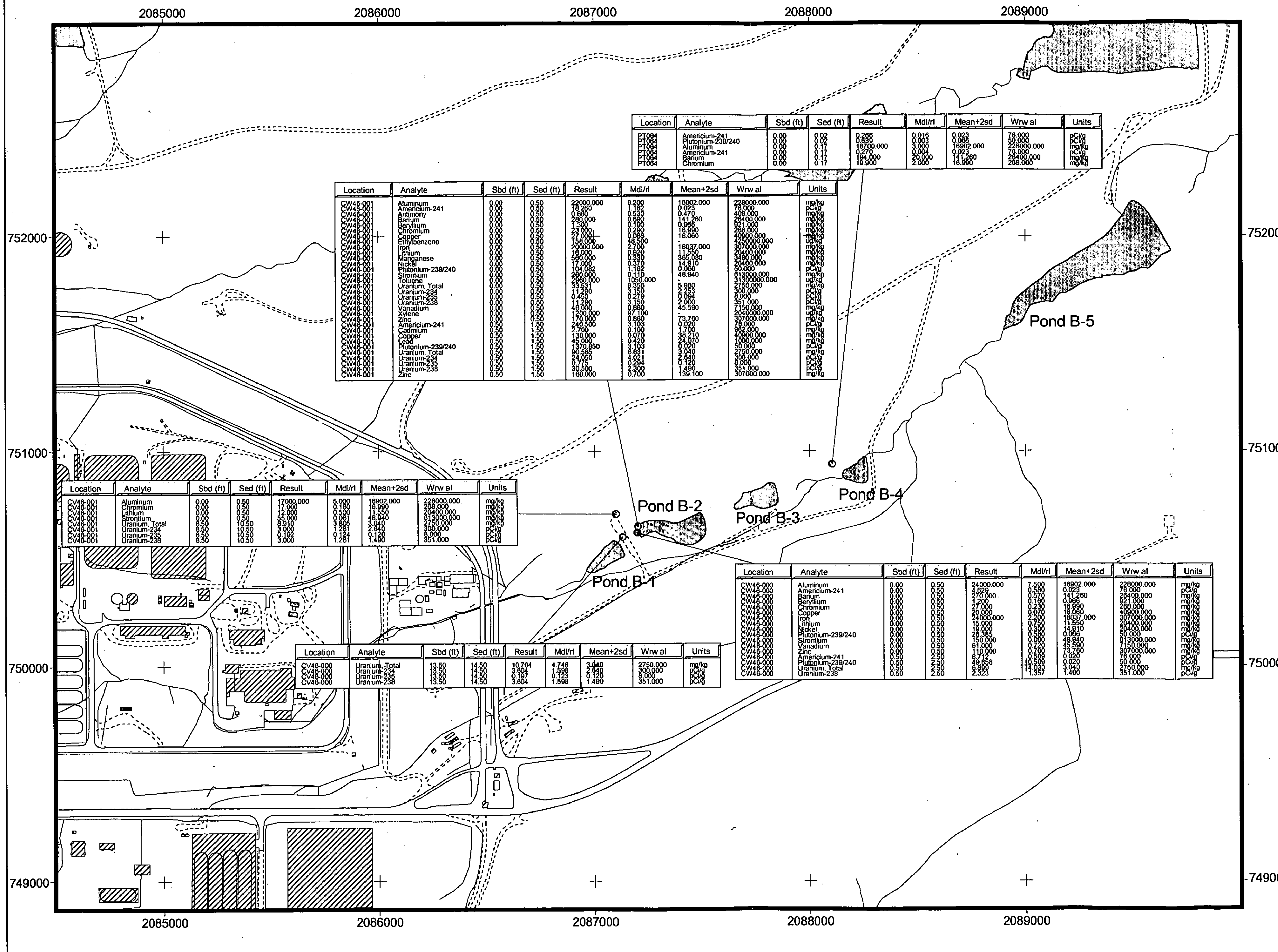

Location	Analyte	Sbd (ft)	Sed (ft)	Result	Mdl/rl	Mean+2sd	Wrw al	Units
PT064	Americium-241	0.00	0.02	0.268	0.016	0.023	76.000	pCi/g
PT064	Plutonium-239/240	0.00	0.02	0.839	0.003	0.066	50.000	pCi/g
PT064	Aluminum	0.00	0.17	18700.000	3.000	16902.000	228000.000	mg/Kg
PT064	Americium-241	0.00	0.17	0.270	0.004	0.023	76.000	pCi/g
PT064	Barium	0.00	0.17	194.000	20.000	141.260	26400.000	mg/Kg
PT064	Chromium	0.00	0.17	19.900	2.000	16.990	268.000	mg/Kg

Location	Analyte	Sbd (ft)	Sed (ft)	Result	Mdl/rl	Mean+2sd	Wrw al	Units
CW46-001	Aluminum	0.00	0.50	22000.000	9.200	16902.000	228000.000	mg/kg
CW46-001	Americium-241	0.00	0.50	18.260	1.162	0.023	76.000	pCi/g
CW46-001	Antimony	0.00	0.50	0.660	0.530	0.470	409.000	mg/kg
CW46-001	Barium	0.00	0.50	280.000	0.690	141.260	26400.000	mg/kg
CW46-001	Beryllium	0.00	0.50	1.300	0.190	0.966	921.000	mg/kg
CW46-001	Chromium	0.00	0.50	23.000	0.290	16.990	268.000	mg/kg
CW46-001	Copper	0.00	0.50	27.000	0.086	18.060	40900.000	mg/kg
CW46-001	Ethylbenzene	0.00	0.50	158.000	48.500	-	4250000.000	ug/kg
CW46-001	Iron	0.00	0.50	20000.000	2.700	18037.000	307000.000	mg/kg
CW46-001	Lithium	0.00	0.50	16.000	0.920	11.550	20400.000	mg/kg
CW46-001	Manganese	0.00	0.50	560.000	0.330	365.080	3480.000	mg/kg
CW46-001	Nickel	0.00	0.50	17.000	0.370	14.910	20400.000	mg/kg
CW46-001	Plutonium-239/240	0.00	0.50	104.082	1.162	0.066	50.000	pCi/g
CW46-001	Strontium	0.00	0.50	260.000	0.110	48.940	613000.000	mg/kg
CW46-001	Toluene	0.00	0.50	2960.000	1050.000	-	31300000.000	ug/kg
CW46-001	Uranium, Total	0.00	0.50	33.531	9.356	5.980	2750.000	mg/kg
CW46-001	Uranium-234	0.00	0.50	11.290	3.150	2.253	300.000	pCi/g
CW46-001	Uranium-235	0.00	0.50	0.450	0.279	0.094	8.000	pCi/g
CW46-001	Uranium-238	0.00	0.50	11.290	3.150	2.000	351.000	pCi/g
CW46-001	Vanadium	0.00	0.50	46.000	0.880	45.590	7150.000	mg/kg
CW46-001	Xylene	0.00	0.50	1200.000	97.100	-	2040000.000	ug/kg
CW46-001	Zinc	0.00	0.50	170.000	0.860	73.760	307000.000	mg/kg
CW46-001	Americium-241	0.50	1.50	240.500	3.103	0.020	76.000	pCi/g
CW46-001	Cadmium	0.50	1.50	2.700	0.100	1.700	962.000	mg/Kg
CW46-001	Copper	0.50	1.50	130.000	0.070	38.210	40900.000	mg/kg
CW46-001	Lead	0.50	1.50	45.000	0.420	24.970	1000.000	mg/kg
CW46-001	Plutonium-239/240	0.50	1.50	1370.850	3.103	0.020	50.000	pCi/g
CW46-001	Uranium, Total	0.50	1.50	90.585	6.831	3.040	2750.000	mg/kg
CW46-001	Uranium-234	0.50	1.50	24.050	4.021	2.640	300.000	pCi/g
CW46-001	Uranium-235	0.50	1.50	0.775	0.294	0.120	8.000	pCi/g
CW46-001	Uranium-238	0.50	1.50	30.500	2.300	1.490	351.000	pCi/g
CW46-001	Zinc	0.50	1.50	160.000	0.700	139.100	307000.000	mg/Kg

Location	Analyte	Sbd (ft)	Sed (ft)	Result	Mdl/rl	Mean+2sd	Wrw al	Units
CV46-001	Aluminum	0.00	0.50	17000.000	5.000	16902.000	228000.000	mg/kg
CV46-001	Chromium	0.00	0.50	17.000	0.160	16.990	268.000	mg/kg
CV46-001	Lithium	0.00	0.50	12.000	0.500	11.550	20400.000	mg/kg
CV46-001	Strontium	0.00	0.50	55.000	0.061	48.940	613000.000	mg/kg
CV46-001	Uranium, Total	8.50	10.50	8.910	3.805	3.040	2750.000	mg/kg
CV46-001	Uranium-234	8.50	10.50	3.000	1.281	2.640	300.000	pCi/g
CV46-001	Uranium-235	8.50	10.50	0.192	0.124	0.120	8.000	pCi/g
CV46-001	Uranium-238	8.50	10.50	3.000	1.281	1.490	351.000	pCi/g

Location	Analyte	Sbd (ft)	Sed (ft)	Result	Mdl/rl	Mean+2sd	Wrw al	Units
CV46-000	Uranium, Total	13.50	14.50	10.704	4.746	3.040	2750.000	mg/kg
CV46-000	Uranium-234	13.50	14.50	3.604	1.598	2.640	300.000	pCi/g
CV46-000	Uranium-235	13.50	14.50	0.197	0.123	0.120	8.000	pCi/g
CV46-000	Uranium-238	13.50	14.50	3.604	1.598	1.490	351.000	pCi/g

Location	Analyte	Sbd (ft)	Sed (ft)	Result	Mdl/rl	Mean+2sd	Wrw al	Units
CW46-000	Aluminum	0.00	0.50	24000.000	7.500	16902.000	228000.000	mg/kg
CW46-000	Americium-241	0.00	0.50	4.629	0.580	0.023	76.000	pCi/g
CW46-000	Barium	0.00	0.50	270.000	0.570	141.260	26400.000	mg/kg
CW46-000	Beryllium	0.00	0.50	1.200	0.160	0.966	921.000	mg/kg
CW46-000	Chromium	0.00	0.50	27.000	0.230	16.990	268.000	mg/kg
CW46-000	Copper	0.00	0.50	20.000	0.070	18.060	40900.000	mg/kg
CW46-000	Iron	0.00	0.50	24000.000	2.200	18037.000	307000.000	mg/kg
CW46-000	Lithium	0.00	0.50	15.000	0.750	11.550	20400.000	mg/kg
CW46-000	Nickel	0.00	0.50	19.000	0.300	14.910	20400.000	mg/kg
CW46-000	Plutonium-239/240	0.00	0.50	26.385	0.580	0.066	50.000	pCi/g
CW46-000	Strontium	0.00	0.50	150.000	0.090	48.940	613000.000	mg/kg
CW46-000	Vanadium	0.00	0.50	61.000	0.720	45.590	7150.000	mg/kg
CW46-000	Zinc	0.00	0.50	110.000	0.700	73.760	307000.000	mg/kg
CW46-000	Americium-241	0.50	2.50	8.712	0.509	0.020	76.000	pCi/g
CW46-000	Plutonium-239/240	0.50	2.50	49.658	0.509	0.020	50.000	pCi/g
CW46-000	Uranium, Total	0.50	2.50	6.899	4.030	3.040	2750.000	mg/kg
CW46-000	Uranium-238	0.50	2.50	2.323	1.357	1.490	351.000	pCi/g

Figure 4

IHSS Group NE-1
B-Ponds Existing Surface and Subsurface Soil Results Greater than MDLs/RLs or Background Means Plus Two Standard Deviations

Key

- Detected Above WRW Action Level
- Detected Below Action Level
- Below Background or MDL/RL
- Demolished Structure
- Structure
- Asphalt
- Dirt Road
- Lake
- Stream

N
W E
S

200 0 200 400 Feet

Scale = 1:5,500

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD 27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by: Date: September 2004

RADMS

Prepared for:

KAISER•HILL COMPANY

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current site conditions, erosion from storm events or flooding is a possible mechanism here subsurface soil could become surface soil or impact surface water in the B-Ponds area.

Screen 3 – Does subsurface soil contamination for radionuclides exceed criteria defined in Section 5.3 and Attachment 14?

Yes. Existing subsurface soil data, for IHSS Group NE-1 Ponds B-1, B-2, and B-3, indicate that activities of radionuclides exceed the RFCA WRW ALs at one location with a reported activity of Pu-239/240 at 1,370.9 pCi/g at a depth of 0.5 to 1.5 feet below ground surface (RFCA Section 5.3) (DOE et al, 2003).

Screen 4 – Is there an environmental pathway and sufficient quantity of COCs that would cause an exceedance of the surface water standards?

Yes. Contaminant migration via erosion from a significant storm event or flooding is a possible pathway whereby surface water could be affected by the B-Pond's sediment and soil. Generally, many of the IHSSs within the IA that are a source of groundwater contamination are potential sources for historical or current contamination in Ponds B-1, B-2 and B-3.

The nearest RFCA surface water points of evaluation (POEs) are GS10, located upstream of Pond B-1, and GS08, located downstream of Pond B-5. Both of these POEs have had reported radionuclide activities greater than water quality ALs. The 100, 300, 400, 500, 600, 700, 800, and 900 areas all contribute flow to GS10 (DOE 2003b). Any groundwater encountered will be managed independently through collection and analysis prior to final disposition.

2.4 Remediation Plan

In accordance with RFCA, Paragraph 16, remedial actions are exempt from the administrative requirement to obtain federal or state permits, in this case a Clean Water Act Section 404 permit, but the substantive requirements of such permits must be met. Sediment removal activities, as described in this Notification, will include proper maintenance, control soil erosion, protect water quality and minimize impacts to wildlife species. The proposed actions will result in temporary impacts to the wetlands in this area. Approximately 2.6 acres of open water and emergent wetlands have been identified (based on high water areas) near the ponds. Following remediation activities, the ponds and wetlands will be restored. Therefore, the change in inventory resulting from this action should be minimal.

The RSOP Notification remediation plan for IHSS Group NE-1 Ponds B-1, B-2, and B-3 includes the following objectives:

- Conduct work according to the following general sequence:
  - Dewater the ponds;
    a) Pond B-1 will be pumped into Pond B-2
    b) Pond B-2 will be pumped into Pond A-2
    c) Pond B-3 will be pumped into Pond A-3 after water is released from Building 995
  - Build water diversion ditches around each pond to minimize run-on;

  - Stabilize sediment with reagent to remove free liquids;
  - Excavate contaminated sediment;
  - Perform confirmation sampling;
  - Recontour ponds to accommodate lower flows;
  - Revegetate the area;
  - Package stabilized sediment into shipping containers;
  - Dispose of sediment off site.

- Sediment will be removed laterally to the average water mark or until confirmation sampling indicates no further sediment or soil removal is necessary in accordance with RFCA.

- Remove sediment and soil with Pu-239/240 or Am-241 activities greater than the RFCA WRW AL. If activities are greater than WRW ALs below 3 feet from the top of sediment, conduct an SSRS. Sediment in Ponds B-1, B-2, and B-3 is approximately 1 to 2-feet thick although some areas may be thicker. All sediment will be removed from Ponds B-1, B-2, and B-3 and confirmation samples will be collected and analyzed from the soil below the sediment.

While this Notification addresses only soil and sediment removal from Ponds B-1, B-2, and B-3, additional considerations including the following, will be taken into account:

- A Biological Evaluation (Attachment 1) was prepared that describes impacts to endangered species and wetlands. The Biological Evaluation is being discussed with EPA.

- The determination of the final configuration of the ponds and dams (including the other B-series, A-series, and C-series ponds) will be developed by KH and should be completed to allow construction of the notch modifications after remediation activities are complete. This schedule would allow the least physical disturbance of the area.

- Effluent discharge from Building 995 will be directed to Pond B-3 until the building is decommissioned in October 2004 and all the remaining effluent is discharged. Sediment removal will commence in B-3 once effluent discharge has ceased.

It is anticipated that after remediation there may be areas with concentrations of metals, radionuclides, and organics greater than the background means plus two standard deviations or reporting limits (RLs), but below RFCA ALs.

2.5 Stewardship Evaluation

Based on the PCOCs (Table 1) and the ER RSOP (DOE 2003a), it is anticipated that all contamination above RFCA ALs will be remediated. Figure 2 shows the potential remediation areas.

An additional stewardship evaluation will be conducted during remediation using the consultative process and will be documented in a closeout report for IHSS Group NE-1 (Ponds B1, B-2, and B-3). A new map of residual contamination will be generated after remediation. The following sections present the stewardship evaluation.

2.5.1 Proximity to Other Contaminant Sources

IHSS Group NE-1 (Ponds B-1, B-2, and B-3) is in the RFETS Northeastern BZ and receives flow from the central IA. A number of IHSS Groups are located within the area draining to the B-Ponds. These IHSS Groups still require closure activities by ER or D&D and include the following:

- IHSS Group 000-2,
- IHSS Group 000-4,
- IHSS Group 100-1,
- IHSS Group 100-2,
- IHSS Group 400-7 (accelerated action underway; will be complete before B-Series pond remediation begins),
- IHSS Group 500-3,
- IHSS Group 700-2,
- IHSS Group 700-3,
- IHSS Group 700-8, and
- IHSS Group 800-3.

Demolition and any accelerated action activities at these IHSS Groups could be a potential source of contamination to the B-Ponds. Most significantly, demolition and remediation activities at Building 776/777 (IHSS Group 700-3) pose a potential for radioactive contaminants to be transported to the B-Ponds via water runoff from dust suppression operations during demolition. To minimize this potential, dust suppression water associated with the demolition activity will be collected in tanks and recycled. Erosion controls will be established and maintained at the boundaries of the building footprint through berms, wattles, or straw bales. Additionally, storm drains in the vicinity will be covered during the demolition activities. The management of this water is addressed in the Building 776/777 Closure Project Decommissioning Operations Plan (DOE1999).

2.5.2 Surface Water Protection

Surface water protection includes the following considerations:

Is there a pathway to surface water from potential erosion to streams or drainages?

Yes. Sediment and soil contaminants from IHSS Group NE-1 (Ponds B-1, B-2, and B-3) could migrate to surface water. However, during remediation activities, all existing drainage from each pond will be blocked, thereby, making any potential impact to surface water from sediment unlikely.

Do characterization data indicate there are contaminants in surface soil?

Yes. Existing sediment and soil data for IHSS Group NE-1 (Ponds B-1, B-2, and B-3), indicate there are concentrations of Am-241 and Pu-239/240 that exceed RFCA WRW ALs.

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Do monitoring results from POEs or Points of Compliance (POCs) indicate there are surface water impacts from the area under consideration?

Yes. The nearest RFCA POEs are GS10 (upstream of Ponds B-1) and GS08 (downstream of Pond B-5) (Figure 1). GS08 receives flow from all of the B-Series Ponds (though B-1 and B-2 are frequently pumped to North Walnut Creek) and treated effluent from the Eastern Collection Trench. Sample results for Pu-239/240 and Am-241 have been measured above 0.15 pCi/L at both of these monitoring stations. However, IHSS NE-1 (Ponds B-1, B-2, and B-3) receives water from a large part of the IA, and surface water quality at the monitoring stations cannot be attributable to any single IHSS Group.

Is the IHSS Group in an area with high erosion potential, based on the 100-Year Average Erosion Map?

Yes. IHSS Group NE-1 (Ponds B-1, B-2, and B-3) is located in an area subject to erosion in accordance with Figure 1 of RFCA (DOE et al, 2003).

2.5.3 Monitoring

Monitoring includes the following considerations:

Do monitoring results from POEs or POCs indicate there are groundwater impacts from the area under consideration?

No. All RFETS groundwater discharges into the drainages and ponds. The Site plume location map (DOE 2002) indicates there is VOC contamination in groundwater southwest of the B-Series Ponds and is defined as the East Trenches Plume. Numerous wells are used to monitor groundwater both upgradient and downgradient of the East Trenches Plume Collection System. Groundwater quality data obtained from monitoring wells located downgradient of the collection trench and immediately upgradient of the B-Series Ponds indicate that concentrations of some VOCs are greater than the maximum contaminant level (MCL); however, upgradient of the trench, prior to capture and treatment, VOC contaminant concentrations are greater than one-hundred times the MCL (DOE 2002).

The plume is attributable to multiple upgradient sources, i.e., the 903 Pad and East Trenches. The B-series ponds are not a source of the East Trenches Plume. Further groundwater evaluation will be conducted as part of the groundwater plume remedial decision and future site-wide evaluation.

Can the impact be traced to a specific IHSS Group?

No. Impacts to groundwater cannot be traced IHSS Group NE-1 (Ponds B-1, B-2, and B-3). All sources are upgradient of the ponds.

Are additional monitoring stations needed?

Not applicable at this time. The need for and placement of monitoring stations will be re-evaluated in the Long-Term Stewardship Plan.

Can existing monitoring locations be deleted if additional remediation is conducted?

Not applicable at this time. Existing wells monitor contamination from areas outside IHSS Group NE-1 (Ponds B-1, B-2, and B-3).

2.5.4 Stewardship Actions and Recommendations

The current stewardship actions and recommendations for IHSS Group NE-1 (Ponds B-1, B-2, and B-3) are as follows:

- Use Best Management Practices (BMPs) to reduce erosion into surface water.
- Implement near-term institutional controls until final closure and stewardship decisions are implemented, including the following:
  - Restrict access; and
  - Control soil excavations through the Site Soil Disturbance Permit process.
- Implement long-term stewardship actions, including the following:
  - Prohibitions on construction of buildings in the area; and
  - Restrictions on excavations or other soil disturbances.

These recommendations may change based on in-process remediation activities and other future RFETS remediation decisions.

2.6 Accelerated Action Remediation Goals

ER RSOP remedial action objectives (RAOs) include the following:

- Provide a remedy consistent with the RFETS goal of protection of human health and the environment;
- Provide a remedy that minimizes the need for long-term maintenance and institutional or engineering controls; and
- Minimize the spread of contaminants during implementation of accelerated actions.
- Minimize disturbances to habitat in the area due to remediation activities.

2.7 Treatment

Not applicable at this time.

2.8 Project-Specific Monitoring

Air samplers may be used at the remediation area consistent with work controls to determine airborne radioactivity concentrations. Approximate locations of air samplers are shown on Figure 2; however, actual locations of air samplers will be determined in the field.

2.9 Resource Conservation and Recovery Act Units and Intended Waste Disposition

Not applicable.

2.10 Administrative Record Documents

DOE, 1992-2003, Historical Release Reports for the Rocky Flats Plant, Golden, Colorado.

DOE, 1996, Final Phase I RFI/RI Report, Walnut Creek Priority Drainage, Operable Unit 6, Rocky Flats Plant, Golden, Colorado, February.

DOE, 1999, Building 776/777 Closure Project, Decommissioning Operations Plan, Revision 0, Rocky Flats Environmental Technology Site, Golden, Colorado, November.

DOE, 2002, Buffer Zone Sampling and Analysis Plan, Rocky Flats Environmental Technology Site, Golden, Colorado, June.

DOE, 2003, Environmental Restoration RFCA Standard Operating Protocol for Routine Soil Remediation, Modification 1, Rocky Flats Environmental Technology Site, Golden, Colorado, September.

DOE, 2003, RFCA Standard Operating Protocol for Recycling Concrete, Rocky Flats Environmental Technology Site, Revision 1, Golden, Colorado, June.

DOE, CDPHE, and EPA, 2003, Modifications to the Rocky Flats Cleanup Agreement Attachment, U.S. Department of Energy, Colorado Department of Public Health and Environment, and U.S. Environmental Protection Agency, Rocky Flats Environmental Technology Site, Golden, Colorado, June.

2.11 Projected Schedule

Remediation of IHSS Group NE-1 (Ponds B-1, B-2, and B-3) is expected to begin in the First Quarter FY05.

3.0 PUBLIC PARTICIPATION

ER RSOP Notification #04-11 activities will be discussed at the October 2004 ER/D&D Status meeting. A Portable Document Format (PDF) version of this Notification was provided to the local governments. This Notification is available at the Rocky Flats Reading Rooms and on the Environmental Data Dynamic Information Exchange (EDDIE) Website at www.rfets.gov.

4.0 REFERENCES

DOE, 1992, Historical Release Report for the Rocky Flats Plant, Golden, Colorado, June.

DOE, 1996, Final Phase I RFI/RI Report, Walnut Creek Priority Drainage, Operable Unit 6, Rocky Flats Plant, Golden, Colorado, February.

DOE, 1997, Annual Historical Release Report for the Rocky Flats Plant, Golden, Colorado, September.

DOE, 1999, Building 776/777 Closure Project, Decommissioning Operations Plan, Revision 0, Rocky Flats Environmental Technology Site, Golden, Colorado, November.

DOE, 2002, Second Quarter RFCA Groundwater Monitoring Report, Rocky Flats Environmental Technology Site, Golden, Colorado, November.

DOE, 2003a, Environmental Restoration RFCA Standard Operating Protocol for Routine Soil Remediation, Modification 1, Rocky Flats Environmental Technology Site, Golden, Colorado, September.

DOE, 2003b, Automated Surface-Water Monitoring Report, Water Year 2002, Rocky Flats Environmental Technology Site, Golden, Colorado, November.

DOE, CDPHE, and EPA, 2003, Modifications to the Rocky Flats Cleanup Agreement Attachment, U.S. Department of Energy, Colorado Department of Public Health and Environment, and U.S. Environmental Protection Agency, Rocky Flats Environmental Technology Site, Golden, Colorado, June.

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Attachment 1

B-Ponds Remediation Activities
Biological Evaluation Rev. 3
Classification Exemption CEX-105-01

The B-Series Ponds are located in South Walnut Creek at the Rocky Flats Environmental Technology Site. The ponds have served as detention ponds for the past several decades. As part of the Site cleanup and closure activities, the sediments in Ponds B-1, B-2, and B-3, all three of which have elevated contaminant levels will be remediated. It is estimated that approximately 3 feet of the upper layer of sediment and soil will be removed from each pond. Contaminated material will be placed into waste containers, moved to a temporary staging area pending characterization, and shipped for offsite disposal. The project is being conducted as a Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) action and therefore falls under the jurisdiction of the U.S. Environmental Protection Agency (EPA). Current plans are to begin the work in late September/early October 2004.

The general description and sequence of the work activities necessary to complete the remediation of the B-Ponds (B-1, B-2, and B-3) is as follows:

- Pump surface water in B-1 into B-2.
- Pump combined B-1 and B-2 water from B-2 into A-2.
- Pump B-3 surface water to A-2 after B995 is closed.
- Stabilize B-1 sediments with reagent to remove free water.
- Excavate stabilized soil in B-1 and place directly into waste containers for off-site disposal.
- Stabilize B-2 sediments with reagent to remove free water.
- Excavate contaminated soil in B-2 and place directly into waste containers for off-site disposal.
- Stabilize sediments in B-3 and excavate into waste containers.
- Fill material may be added to the bottom of each pond to return the pond bottom elevations to levels that are conducive to habitat restoration and for the dam notching activities that are to be conducted at a later date under authorization by the USACOE.
- Once final contouring is completed, revegetation using native plant species will be performed.

The sediment removal will take place to the high water mark or to where confirmation sampling indicates no further contaminants (i.e. below action levels). Sediment will be removed from the ponds using a sludge pump, excavator or similar equipment. Soil directly below the sediment will be excavated using an excavator or similar equipment. Once dried, the sediments will be removed and placed directly into waste containers for off-site disposal. Sediment will be deposited into waste containers with appropriate amounts of polymer or other de-watering agent added to eliminate "free water". Debris will be removed if necessary and packaged in appropriate containers. Straw waddles, silt fence and/or straw bales will be used for erosion control. Temporary access roads may be constructed if necessary to access the pond bottom with construction equipment.

The wetlands in the area of the B-Ponds were delineated by the U.S. Army Corps of Engineers in 1994 as part of a wetland study at the Site (Figure 1; COE 1994). Table 1 below lists the wetland types present at each of the three ponds. Some additional seepage on the south side of the B-1 pond has created conditions where enough moisture has been present at or near the ground surface to support the growth of vegetation characteristic of wetter areas. These areas are dominated by arctic rush (*Juncus balticus*) and Canada thistle (*Cirsium arvense*).

Table 1. Temporary Wetland Impacts

Wetland Type	Acres
Pond B-1	
Palustrine Scrub-Shrub, Seasonally Flooded	0.02
Palustrine Emergent, Temporarily Flooded	0.07
Palustrine Unconsolidated Bottom, Semipermanently Flooded	0.50
Palustrine Emergent, Saturated	0.21
Palustrine Unconsolidated Bottom, Permanently Flooded	0.00
Total	0.80
Pond B-2	
Palustrine Emergent, Temporarily Flooded	0.20
Palustrine Emergent, Seasonally Flooded	0.19
Lacustrine Limnetic, Unconsolidated Bottom, Permanently Flooded	0.72
Total	1.11
Pond B-3	
Palustrine Scrub-Shrub, Seasonally Flooded	0.02
Palustrine Unconsolidated Bottom, Permanently Flooded	0.50
Palustrine Emergent, Temporarily Flooded	0.17
Palustrine Emergent, Seasonally Flooded	0.08
Total	0.70
Grand Total	2.61

The B-Series Ponds are located in the habitat of the federally listed threatened Preble's meadow jumping mouse (Preble's mouse; *Zapus hudsonius preblei*). The Preble's mouse and other threatened or endangered species issues have been addressed in Section 7 consultation with the USFWS in a Programmatic Biological Assessment (PBA; Parts I and II) written for Site closure activities (DOE 2004a, 2004b). The USFWS has issued a Biological Opinion (BO) covering the project activities outlined in this document (USFWS 2004).

Wetland impacts should be temporary because after project completion the ponds will be allowed to refill and the wetland vegetation will be re-established. Wetland re-establishment will not be conducted until another project, that will notch each of the dams at ponds B-1, B-2, and B-3, has been completed. Revegetation will occur after the notching since portions of the project footprints overlap. Then the areas will be revegetated using native plant species, either by seeding, staking, or using container plants, following the guidance and success criteria outlined in Part II of the PBA for Preble's mouse mitigation (DOE 2004b).

The U.S. Department of Energy is notifying the EPA that wetlands at ponds B-1, B-2, and B-3, will be impacted as part of this project. The B-Pond remediation work is being conducted under the *Environmental Restoration RFCA Standard Operating Protocol for Routine Soil Remediation FY04 Notification #04-011 IHSS Group NE-1 (Ponds B-1, B-2, and B-3).*

DOE. 2004a. Programmatic Biological Assessment for Department of Energy Activities at the Rocky Flats Environmental Technology Site. Part I. U.S. Department of Energy, Rocky Flats Field Office, Golden, CO. January 2004.

DOE. 2004b. Programmatic Biological Assessment for Department of Energy Activities at the Rocky Flats Environmental Technology Site. Part II. U.S. Department of Energy, Rocky Flats Field Office, Golden, CO. April 2004.

USACE, 1994. Rocky Flats Plant Wetland Mapping and Resource Study. (Prepared for U. S. Department of Energy), United States Army Corps of Engineers, Omaha District. December. 1994.

USFWS. 2004. Biological Opinion for Part II of the Programmatic Biological Assessment for Department of Energy Activities at the Rocky Flats Environmental Technology Site. U.S. Fish and Wildlife Service, Lakewood Office, Lakewood, CO. April 5, 2004.

Figure 3

IHSS Group NE-1
Ponds B-1, B-2, and B-3
Existing Sediment Sampling Results Greater than MDLs/RLs or Background Means Plus Two Standard Deviations

2082000 2084000 2086000 2088000 2090000 2092000

754000 752000 750000 748000 746000

Pond B-1 Pond B-2 Pond B-3 Pond B-4

KEY

- Detected Above WRW Action Level
- Detected Below Action Level
- Below Background or MDL/RL

- Demolished Structure
- Structure
- Asphalt
- Dirt Road
- Lake
- Stream

N W E S

400 0 400 800 Feet

Scale 1:5,750

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD 27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by: RADMS

Date: September 2004

Prepared for: KAISER-HILL COMPANY

File:W:\Projects\fy2004\NE-1\remediation\b123ponds032904gpp.apr